



PATENTS

Attorney Docket No.: ELM-1 Cont.15

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Glenn J. Leedy

Application No. : 10/766,629 Confirmation No.: 3771

Filed : January 27, 2004

For : APPARATUS AND METHODS FOR MASKLESS  
PATTERN GENERATION

Group Art Unit : 2818

Examiner : Thinh T. Nguyen

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with 37 C.F.R. §§ 1.56 and 1.97,  
applicant wishes to call the attention of the Examiner to the  
following documents:

U.S. Patent Documents

|                |            |              |
|----------------|------------|--------------|
| Sobczak        | 08-05-1986 | US 4,604,162 |
| Butt et al.    | 07-18-1989 | US 4,849,857 |
| Williamson     | 05-22-1990 | US 4,928,058 |
| Sliwa          | 02-05-1991 | US 4,990,462 |
| Kessler et al. | 05-05-1992 | US 5,110,712 |
| Sliwa et al.   | 06-02-1992 | US 5,119,164 |
| Moslehi        | 02-08-1994 | US 5,284,804 |
| Clifton et al. | 01-02-1996 | US 5,480,842 |
| Sachdev et al. | 11-28-1995 | US 5,470,693 |
| Flesher et al. | 03-31-1998 | US 5,733,814 |
| Clifton et al. | 04-09-2002 | US Re 37,637 |

Foreign Patent Documents

|                |    |            |   |
|----------------|----|------------|---|
| EP 0 201 380   | B1 | 12-17-1986 | Fairchild Semiconductor Corporation                                   |
| EP 0 224 418   | B1 | 06-03-1987 | Fujitsu Limited   |
| EP 0 419 898   | B1 | 04-03-1991 | Siemens Aktiengesellschaft  |
| EP 0 455 455   | B1 | 11-06-1991 | AT&T Corp.  |
| EP 0 487 302   | B1 | 05-27-1992 | Shin-ETSU Handotai Company Limited                                    |
| EP 0 503 816   | B1 | 09-16-1992 | Shin-ETSU Handotai Company Limited                                    |
| EP 0 518 774   | B1 | 12-16-1992 | France Telecom  |
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| EP 0 555 252   | B1 | 08-18-1993 | Fraunhofer-Gesellschaft Zur Förderung Der Angewandten Forschung E.V.. |
| WO 1989 010255 |    | 11-02-1989 | 3D Systems Inc.   |
| WO 1990 009093 |    | 08-23-1990 | Polylithics Inc.  |
| WO 1992 017901 |    | 10-15-1992 | Integrated System Assemblies Corporation                              |

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Jones, R.E., Jr. "An evaluation of methods for passivating silicon integrated circuits"; April 1972; pp. 23-8

Svechnikov, S.V.; Kobylyatskaya, M.F.; Kimarskii, V.I.; Kaufman, A.P.; Kuzovlev, Yu. I.; Cherepov, Ye. I.; Fomin, B.I.; "A switching plate with aluminum membrane crossings of conductors"; 1972

Sun, R.C.; Tisone, T.C.; Cruzan, P.D.; "Internal stresses and resistivity of low-voltage sputtered tungsten films (microelectronic cct. conductor)"; March 1973; pp. 1009-16

Wade, T.E.; "Low temperature double-exposed polyimide/oxide dielectric for VLSI multilevel metal interconnection"; 1982; pp. 516-19

Nonpatent Literature Documents

Boyer, P.K.; Collins, G.J.; Moore, C.A.; Ritchie, W.K.; Roche, G. A.; Solanski, R. (A); Tang, C.C.; "Microelectronic thin film deposition by ultraviolet laser photolysis MONOGRAPH TITLE - Laser processing of semiconductor devices"; 1983; pp. 120-126

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Chen, Y.S.; Fatemi, H.; "Stress measurements on multilevel thin film dielectric layers used in Si integrated circuits"; May-June 1986; pp. 645-9

Salazar, M.; Wilkins, C.W., Jr.; Ryan, V.W.; Wang, T.T.; "Low stress films of cyclized polybutadiene dielectrics by vacuum annealing"; Oct. 21-22, 1986; pp. 96-102

Townsend, P.H.; Huggins, R.A.; "Stresses in borophosphosilicate glass films during thermal cycling"; Oct. 21-22, 1986; pp. 134-41

Pai, Pei-Lin; "Multilevel Interconnection Technologies--A Framework And Examples"; 1987; pp. 1871

Pei-lin Pai; Chetty, A.; Roat, R.; Cox, N.; Chiu Ting; "Material characteristics of spin-on glasses for interlayer dielectric applications"; November 1987, pp. 2829-34

Allen, Mark G.,; Senturia, Stephen D.; "Measurement of polyimide interlayer adhesion using microfabricated structures"; 1988; pp. 352-356

Chang, E.Y.; Cibuzar, G.T.; Pande, K.P.; "Passivation of GaAs FET's with PECVD silicon nitride films of different stress states"; September 1988; pp. 1412-18

Riley, P.E.; Shelley, A.; "Characterization of a spin-applied dielectric for use in multilevel metallization"; May 1988; pp. 1207-10

Tamura, H.; Nishikawa, T.; Wakino, K.; Sudo, T.; "Metalized MIC substrates using high K dielectric resonator materials"; October 1988; pp. 117-126

Kochugova, I.V.; Nikolaeva, L.V.; Vakser, N.M., (M.I. Kalinin Leningrad Polytechnic Institute (USSR)); "Electrophysical investigation of thin-layered inorganic coatings"; 1989; pp. 826-828

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Reche, J.J. H.; "Control of thin film materials properties used in high density multichip interconnect"; April 24-28, 1989; p. 494

Maw, T.; Hopla, R.E.; "Properties of a photoimageable thin polyimide film"; Nov. 26-29-, 1990; pp. 71-6

Draper, B. L.; Hill, T.A.; "Stress and stress relaxation in integrated circuit metals and dielectrics"; July-Aug. 1991; pp. 1956-62

Guckel, H.; "Surface micromachined pressure transducers"; 1991; pp. 133-146

Garino, T.J.; Harrington, H. M.; "Residual stress in PZT thin films and its effect on ferroelectric properties'; 1992; pp. 341-7

The aforementioned references are listed on the accompanying Form PTO-SB/08 (submitted in duplicate).

Pursuant to 37 C.F.R. § 1.98(a)(2), no copies of the aforementioned U.S. Patent Documents are being submitted.

Copies of the listed Foreign Patent Documents and Nonpatent Literature Documents are being submitted herewith.

Applicant reserves the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

It is respectfully requested that these references be: (1) fully considered by the Patent and Trademark Office during the examination of this application; and (2) printed on any patent which may issue on this application. Applicant requests that a copy of Form PTO-SB/08, as considered and initialled by the Examiner, be returned with the next communication.

The Clifton and Flesher U.S. Patent Documents (U.S. Patent Nos. 5,480,842, 5,733,814, and Re 37,637) were cited in an Office Action mailed in co-pending commonly assigned U.S. Patent Application No. 10/614,067 on September 21, 2005. Butt et al. U.S. Patent No. 4,849,857 was cited in an Office Action mailed in co-pending commonly assigned U.S. Patent Application No. 10/971,341 on September 20, 2005.

The remaining references cited in this Information Disclosure Statement were brought to applicant's attention in a third-party search conducted less than three month before filing of this Statement. A copy of the third-party search results is enclosed herewith.

This Statement is submitted before the mailing date of the first Office Action on the merits. To the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in this Supplemental Information Disclosure Statement was known to any individual designated in § 1.56 (c) more than three months prior to the filing of this Statement. Pursuant to 37 C.F.R. § 1.97(b) (3), applicant believes no fee is due in connection with this statement. However, if for any reason a fee is due, the Director is hereby authorized to charge payment any fees required in connection with this Statement, or credit any overpayment of the same, to Deposit Account No. 06-1075 (Order No.: 001202.0111). A duplicate copy of this Supplemental Information Disclosure Statement is enclosed herewith.

An early and favorable action is respectfully requested.

Respectfully submitted,



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|---------------------------------|---|----|---|--------------------------|-----------------------------|
| Substitute for form 1449A/B/PTO |   |    |   | <b>Complete if Known</b> |                             |
|                                 |   |    |   | Application Number       | 10/766,629 (Conf. No. 3771) |
|                                 |   |    |   | Filing Date              | January 27, 2004            |
|                                 |   |    |   | First Named Inventor     | Glenn J. Leedy              |
|                                 |   |    |   | Art Unit                 | 2818                        |
|                                 |   |    |   | Examiner Name            | Thinh T. Nguyen             |
| Sheet                           | 1 | of | 3 | Attorney Docket Number   | ELM-1 Cont.15               |

| U.S. PATENT DOCUMENTS |                       |   |                                |  |   |
|-----------------------|-----------------------|---|--------------------------------|--|---|
| Examiner Initials*    | Cite No. <sup>1</sup> | Document Number<br>Number-Kind Code <sup>2</sup> (if known) | Publication Date<br>MM-DD-YYYY | Name of Patentee or<br>Applicant of Cited Document | Pages, Columns, Lines, Where<br>Relevant Passages or Relevant<br>Figures Appear |
|                       |                       | US 4,604,162  | 08-05-1986                     | Sobczak  |   |
|                       |                       | US 4,849,857  | 07-18-1989                     | Butt et al.  |   |
|                       |                       | US 4,928,058  | 05-22-1990                     | Williamson   |   |
|                       |                       | US 4,990,462  | 02-05-1991                     | Sliwa  |   |
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|                       |                       | US 5,119,164  | 06-02-1992                     | Sliwa et al.                                       |   |
|                       |                       | US 5,284,804  | 02-08-1994                     | Moslehi  |   |
|                       |                       | US 5,480,842  | 01-02-1996                     | Clifton et al.                                     |   |
|                       |                       | US 5,470,693  | 11-28-1995                     | Sachdev et al.                                     |   |
|                       |                       | US 5,733,814  | 03-31-1998                     | Flesher et al.                                     |   |
|                       |                       | US Re 37,637  | 04-09-2002                     | Clifton et al.                                     |   |

| FOREIGN PATENT DOCUMENTS |                       |  |                                |   |   |
|--------------------------|-----------------------|--|--------------------------------|---|---|
| Examiner Initials*       | Cite No. <sup>1</sup> | Foreign Patent Document<br>Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known) | Publication Date<br>MM-DD-YYYY | Name of Patentee or<br>Applicant of Cited Document                    | Pages, Columns, Lines,<br>Where Relevant Passages<br>or Relevant Figures Appear |
|                          |                       | EP 0 201 380 B1  | 12-17-1986                     | Fairchild Semiconductor Corporation                                   | T <sup>6</sup>  |
|                          |                       | EP 0 224 418 B1  | 06-03-1987                     | Fujitsu Limited   |   |
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|                          |                       | EP 0 503 816 B1  | 09-16-1992                     | Shin-ETSU Handotai Company Limited                                    |   |
|                          |                       | EP 0 518 774 B1  | 12-16-1992                     | France Telecom  |   |
|                          |                       | EP 0 526 551 B1  | 02-10-1993                     | The Commonwealth of Australia   |   |
|                          |                       | EP 0 554 063 B1  | 08-04-1993                     | Canon Kabushiki Kaisha  |   |
|                          |                       | EP 0 555 252 B1  | 08-18-1993                     | Fraunhofer-Gesellschaft Zur Förderung Der Angewandten Forschung E.V.. |   |
|                          |                       | WO 1989 010255   | 11-02-1989                     | 3D Systems Inc.   |   |
|                          |                       | WO 1990 009093   | 08-23-1990                     | Polylithics Inc.  |   |
|                          |                       | WO 1992 017901   | 10-15-1992                     | Integrated System Assemblies Corporation                              |   |

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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| Sheet                           | 2 | of | 3 | Attorney Docket Number   | ELM-1 Cont.15               |

| <b>NON PATENT LITERATURE DOCUMENTS</b> |                       |   |  |                |
|--|-----------------------|---|--|----------------|
| Examiner Initials*                     | Cite No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |  | T <sup>2</sup> |
|  |                       | Jones, R.E., Jr. "An evaluation of methods for passivating silicon integrated circuits"; April 1972; pp. 23-8   |  |                |
|  |                       | Svechnikov, S.V.; Kobylyatskaya, M.F.; Kimarskii, V.I.; Kaufman, A.P.; Kuzovlev, Yu. I.; Cherepov, Ye. I.; Fomin, B.I.; "A switching plate with aluminum membrane crossings of conductors"; 1972  |  |                |
|  |                       | Sun, R.C.; Tisone, T.C.; Cruzan, P.D.; "Internal stresses and resistivity of low-voltage sputtered tungsten films (microelectronic cct. conductor)"; March 1973; pp. 1009-16  |  |                |
|  |                       | Wade, T.E.; "Low temperature double-exposed polyimide/oxide dielectric for VLSI multilevel metal interconnection"; 1982; pp. 516-19   |  |                |
|  |                       | Boyer, P.K.; Collins, G.J.; Moore, C.A.; Ritchie, W.K.; Roche, G. A.; Solanski, R. (A); Tang, C.C.; "Microelectronic thin film deposition by ultraviolet laser photolysis MONOGRAPH TITLE - Laser processing of semiconductor devices"; 1983; pp. 120-126       |  |                |
|  |                       | Boyer, P.K.; Moore, C.A.; Solanki, R.; Ritchie, W.K.; Roche, G.A.; Collins, G.J.; "Laser photolytic deposition of thin films"; 1983; pp. 119-27   |  |                |
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|  |                       | Townsend, P.H.; Huggins, R.A.; "Stresses in borophosphosilicate glass films during thermal cycling"; Oct. 21-22, 1986; pp. 134-41   |  |                |
|  |                       | Pai, Pei-Lin; "Multilevel Interconnection Technologies--A Framework And Examples"; 1987; pp. 1871   |  |                |
|  |                       | Pei-lin Pai; Chetty, A.; Roat, R.; Cox, N.; Chiu Ting; "Material characteristics of spin-on glasses for interlayer dielectric applications"; November 1987, pp. 2829-34   |  |                |
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|                                 |   |    |   | Examiner Name            | Thinh T. Nguyen             |
| Sheet                           | 3 | of | 3 | Attorney Docket Number   | ELM-1 Cont.15               |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials <sup>1</sup> | Cite No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>2</sup> |
|--------------------------------|-----------------------|---|----------------|
|                                |                       | Maw, T.; Hopla, R.E.; "Properties of a photoimageable thin polyimide film"; Nov. 26-29-, 1990; pp. 71-6   |                |
|                                |                       | Draper, B. L.; Hill, T.A.; "Stress and stress relaxation in integrated circuit metals and dielectrics"; July-Aug. 1991; pp. 1956-62   |                |
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